Claims:

1. A method for manufacturing a workpiece comprising the steps of:

- providing a substrate having a substantially flat surface;
- removing material from said surface by moving said surface of said substrate relative to on and along a polishing surface;
- said moving including a rotation about an axis by a shaft driven in a predetermined manner;
- providing along said shaft a shaft section having a predetermined torque/deformation characteristic, said characteristic of said section being independent of torque/deformation characteristic of said shaft;
- monitoring deformation of said shaft section as a torque indicative signal;
- controlling said removing in dependency of said torque indicative signal;
- manufacturing said workpiece from said substrate having said material removed.

2. The method of claim 1, wherein said shaft carries at one end thereof said substrate.

3. The method of claim 1 or 2, wherein said substrate has at least one material interface between two different materials and substantially parallel to said surface,

thereby monitoring when said removing reaches said interface by said monitoring of said deformation.

4. The method of claim 3, said controlling comprising disabling said removing when reaching said interface is detected.

5. The method of one of claims 1 to 4, further comprising monitoring said deformation by monitoring strain along said section.

6. The method of claim 5, further comprising monitoring said strain by means of a strain sensor arrangement mounted to said section and generating an electric output signal.

7. The method of claim 6, further comprising transmitting a signal dependent on said output signal from said rotating section to a system which is stationary with respect to said section and performing analogue to digital signal conversion of a signal dependent on said output signal before performing said transmitting.

8. The method of one of claims 1 to 7, further comprising providing at least a part of said shaft with a first hollow inner space and providing at least a part of said section with a second hollow inner space, said first and second hollow inner spaces being in communication, monitoring said deformation with a sensor arrangement mounted on said section and generating an electric output signal and transmitting a signal dependent on said output signal to a system stationary with respect to said rotating section through said first and second hollow spaces being in communication.

9. The method of one of claims 1 to 8, further comprising providing at least a part of said shaft with a first hollow inner space and providing at least a part of said section with a second hollow inner space, said first and second hollow spaces being in communication, monitoring said deformation by a sensor arrangement mounted on said section and providing electric supply to said sensor arrangement via said first and second hollow spaces in communication.

10. The method of one of claims 1 to 9, comprising monitoring said deformation by means of a sensor arrangement mounted on said section and generating an electric output signal, transmitting a signal dependent from said electric output signal from said rotating section to a system stationary with respect to said section via a slide contact arrangement.

11. The method of claim 10, further comprising performing said transmitting via at least two independent sliding contact arrangements.

12. The method of one of claims 1 to 11, said shaft having an outer diameter, further comprising providing said section with an outer diameter smaller than said diameter of said shaft.

13. The method of one of claims 1 to 12, wherein said workpiece is a semiconductor workpiece.

14. The method of one of claims 1 to 12, wherein said workpiece is a low-scale or ultra-low-scale integrated microelectronic workpiece.

15. The method of one of claims 1 to 14, further comprising performing said removal by chemical mechanical polishing, thereby applying a slurry to said polishing surface.

16. A torque transducer module comprising a body extending along a central axis and having two end portions, each of said end portions being a part of an axial mount for a respective part to be axially mounted thereto, a strain gage sensor arrangement with at least one electric output.

17. The transducer module of claim 16, further comprising at least one recess along said body, said sensor arrangement being mounted within said recess.

18. The module of claim 17, wherein said recess is defined between said two end portions.

19. The module of one of claims 16 to 18, said body being cylindrical with respect to said axis, said end portion being substantially cylindrical rims projecting from said body, said end portions and said body forming a cylindrical part substantially of I-shape in an axial cross-section with a reduced diameter cylindrical recess.

20. The module of one of claims 16 to 19, wherein said strain gage sensor arrangement is mounted within a recess in the outer surface of said body and further comprising a removable cover for said recess.

21. The module of one of claims 16 to 20, further comprising an analogue to digital converter arrangement with an input operationally connected to said at least one electric output.

22. The module of one of claims 16 to 21, further comprising an axially extending hollow space open at at least one of said end portions.

23. The module of claim 22, further comprising electrical leads in said hollow space being at least one of power supply leads for said sensor arrangement and of signal transmission leads operationally connected to said electric output of said sensor arrangement.

24. A mechanical surface machining apparatus, especially polishing or grinding apparatus, comprising a rotatable transmission shaft coupled to a drive, a torque transducer module with a body and two end portions, at least one of said transmission shaft, of said end portions being mounted to an end portion, said module having a strain gage sensor arrangement with at least one electric output, said transmission shaft and at least a part of said body being hollow, electrical leads in said hollow shaft and said hollow body operationally connected to said sensor arrangement.

25. The apparatus of claim 24, wherein said transducer module is a transducer module according to one of the claims 16 to 22.

26. The apparatus of claim 24 or 25, further comprising a slip-ring contact arrangement between said shaft and a part of said apparatus stationary with respect to said rotatable transmission shaft, said electric leads being operationally connected to said slip-ring contact arrangement.

27. The apparatus of claim 26, wherein at least one of said leads is operationally connected to at least two

independent slip-ring contact arrangements for redundant signal transmission between said shaft and said part.

28. A method for monitoring the load presented by a material on a rotating shaft in intimate contact with said material comprising:

- providing along said shaft a shaft section having a predetermined torque/deformation characteristic, said characteristic of said section being independent of torque/deformation characteristic of said shaft;
- monitoring deformation of said shaft section as a load indicative signal.